first time that the frost hurt the fruit or plants in the light of the moon. By 'the light of the moon' I do not mean any time the moon is shining, but only the period when it is getting bigger each night. As soon as the moon is full it is then 'the dark of the moon,' and frost will injure the green things that it would not affect before. During the present lunation the light of the moon ends April 6 when the moon is full, if we have any cold weather after that you may look out for damage to fruit but none before that."

The Editor does not believe that there is any such lunar influence as above described, and appeals to the intelligent farmers who have kept full records of this subject to give him the actual data of observations whereby this subject may be tested. Every belief in lunar influence has thus far proved to be contrary to the facts, and he expects that this one will also be proved to be so.

RAIN IN THE HAWAIIAN ISLANDS.

Our correspondent, Mr. Curtis J. Lyons, in his report for March, printed elsewhere, states that—

The month has been an unusually rainy one throughout the group. Kaumana (near Hilo), Hawaii, reports 55.58 inches; 10.18 inches fell at Luakaha, Oahu (5 miles from Honolulu); on the 24th unprecedented floods did much damage, especially in Oahu and Kauai; heaviest rain on north side of Oahu on the 27th. Frequent thunder and lightning from the 12th to the 24th.

As before stated in the MONTHLY WEATHER REVIEW, the Editor's study of the general circulation of the atmosphere leads him to believe that the conditions that bring droughts or floods to the Indian Ocean, Asiatic coasts, and Australian regions move slowly eastward over the Pacific and are eventually felt in North America. We shall, with interest, look for a rainy season at some time following these floods in the Hawaiian Islands.

RECENT EARTHQUAKES.

The seismographs maintained by Professor Marvin at Washington, D. C., and Professor Morley, at Cleveland, Ohio, were not affected during the month.

The following reports have been received from the observers of the Weather Bureau, or culled from newspaper correspondents:

2d.—California, Visalia, 2:48 p. m.

3d.—California, Descanso, slight shock at 2:30 a. m.

17th.—California, Upperlake, at 11:40 p. m.; motion from east to west.

19th.—Montana, Marysville, 6:00 a. m., a rumbling noise followed by a severe shock lasting three seconds.

29th.—Kentucky, Mount Hermon, 7:30 p. m., very slight shock.

30th.—California, Oleta, 11:40 p. m., Peachland, 11:40 p. m., vibrations from southwest to northeast, severe. Riovista, 11:40 p. m. San Leandro, 11:40 p. m. Santa Clara, severe at 11:40 p. m. Santa Cruz, heavy, 11:40 p. m., duration from 30 to 40 seconds. Stockton, severe at 11:42 p. m. Vacaville, 11:45 p. m. Fort Ross, 11:45 p. m. Georgetown, between 11:30 p. m. and midnight. Hollister, about midnight, slight but of long duration. Iowa Hill, about 11:45 p. m. Lytton Springs, violent shock, no time given. North San Juan, at 11:42 p. m., vibrations southeast to northwest.

Sonoma: 11:45 p. m., one of the most violent and prolonged shocks ever felt here. The vibrations were from north to south accompanied by a rattle and a noise. The first shock was followed at intervals by four other tremblers that were very heavy and over twenty lesser ones.

Sacramento: 11:38 p. m., three shocks were felt here; they were of an easy undulating motion and seemed to be from southeast to northwest.

Ignacio: Tubbs Island, among the tules, sloughs, and salt water creeks, was surely the center of the great earthquake of the 30th; the island heaved, rocked, and trembled like a platter full of jelly, and everything on it was moved out of place.

Agnews: 11:30 p. m.; Campbell, 11:42 p. m.; duration forty seconds; vibrations from west to east; the motion was slow; it was considered as heavy, if not the heaviest, ever known here.

Centerville: 11:43 p. m., direction north to south; duration thirty seconds; 2 shocks. First shock rolling motion, second and severest seemingly an up and down motion; severest felt since October 21, 1868.

San Jose: One of the heaviest ever experienced occurred at 11:42:22. Lick Observatory reports the total duration forty seconds, and that after the first twelve and thirteen seconds the shocks were more violent than has ever been recorded there. The greater motion was southeast and northwest; the earth moved approximately one-quarter of an inch.

Santa Rosa: Most severe ever felt here; chimneys and plate glass windows destroyed.

Stockton: Severe quake at 11:40; vibrations for thirty seconds.

Los Angeles: No shock was felt here and all reports indicate that the quake was confined to a limited area close to San Francisco. The vibrations died away in Monterey County to the south and in Mendocino and Colusa counties to the north. The greatest energy was exhibited at Vallejo.

Oakland: Lasted several seconds. Tremor not so violent but the duration much longer than usual; at the Chabot Observatory the mean time clock stopped at $11^h\ 42^m\ 24^s$ p. m.

Bolinas: 11:43, seventeen seconds duration, vibrations from north to south; shocks short and sharp.

San Rafael: Severe shock shortly before midnight.

Suisun: Severe and prolonged shock at 11:45 p. m.; vibrations seemed north and south but the shake was very confusing as to direction.

San Francisco: Davidson Observatory, 37° 47′ 28″ N., 122° 25′ 41″ W., 54.5 miles north, 53.5 miles west from Lick Observatory. The first shock was at $11^h\ 42^m\ 16^s$, Pacific standard time, and lasted seventeen seconds. An ivory carving hanging in front of a mirror and almost touching it indicated by its gentle tapping that tremors continued passing until $11^h\ 44^m\ 48^s$, and then after a pause, again at $11^h\ 45^m\ 48^s$, and again later still. The mirror faces south and indicates north and south motions. The vibrations increased for the first six seconds; decreased somewhat to the twelfth second and died away, as far as could be perceived, at the seventeenth second.

San Francisco: The earthquake which occurred at 11:43 p. m., as shown by the hands of the clocks stopped in San Francisco, was the severest which has visited this region for many years. There was no preliminary tremor, but the rocking began without an instant's warning. The 19-story building of Claus Spreckels swayed somewhat, but sustained no injury. One house collapsed, while hundreds of chimneys fell and many panes of glass were broken, but on the whole the damage was slight. The water in the bay rose 2 feet and immediately subsided.

Mare Island: The navy yard on this island appears to have been the center of this earthquake. Many of the brick buildings and costly engineering plants belonging to the Government were injured, and the most conservative estimates place the damage to Federal property at more than $100,000, while about 1,300 men have been temporarily thrown out of employment.

Berkley: At the Students Observatory, University of California, severest experienced here since 1868. The large astronomical clock was stopped by the vibrations at exactly 11:42:26, Pacific standard time, but it is difficult to say how many seconds after the beginning of the disturbance this occurred. The best record of the direction and the intensity

of the vibrations was obtained from the duplex seismograph of Prof. A. Leuschner, and is analogous to the record obtained from the Chabot Observatory.

Prof. A. Leuschner, of the Department of Astronomy at the University at Berkeley, stated:

The duplex seismograph shows that the vertical vibrations were strongest and almost twice as strong as the horizontal vibrations from north to south and from east to west. The first displacement was north. It then turned west, and there were a series of short tremors, principally southwest. The displacement next turned southeast, and the maximum up and down vibration followed. Then came a series of small vibrations, at first southeast and later northwest. A northeast movement followed and was succeeded by one almost twice as strong in a direction exactly opposite. Here an almost circular vibration occurred, and then the vibrations gradually died out in a southwest direction.

METEOROLOGICAL TABLES AND CHARTS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

For text descriptive of tables and charts see page 68 of REVIEW for February, 1898.